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CARVED LITHIC INDUSTRIES BELONGING TO THE ENEOLITHIC IN THE MIDDLE AND LOWER MUREŞ BASIN

DOCTORAL DISSERTATION (ABSTRACT)

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CONTENT

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Eneolithic, Middle and Lower Mureș Basin, carved lithic industries, techno-typological analysis, functional analysis, archaeological research, Foeni Cultural Group, Petrești Culture, Tiszapolgár Culture, Decea Mureșului Cultural Group, Herculane II-III Horizon, correspondence analysis, Winbasp.

INTRODUCTION

The purpose of this work is the recovery and analysis of small pieces of carved stone, which are found in abundance in complexes related to Eneolithic human settlements. The geographical area studied is that of the Middle and Lower Mureș Basin, where its limits are the confluence with the Arieș River to the east, and to the west, the outflow of the Mureș River in the Tisza.

The carved lithic pieces, 1965 specimens in total, discovered at 8 archeological sites, were analyzed from a technological, typological and functional point of view. These analyses made it possible to draw conclusions on how to approach raw lithic materials, from collecting rocks, transporting them to settlements and carving them *in situ* and manufacturing them to serve precise purposes.

Two case studies helped to elaborate these approaches. The first case study raises the problem of discovering numerous sickle inserts with vegetal polish (SiO_2) deposited obliquely bifacially on one or both edges of the pieces, to the detriment of those with macropolish deposited in parallel and bifacial sections, during the early and middle Transylvanian Eneolithic, with special reference to Tiszapolgár culture. The second case study uses the analysis of the types of archaeological artifacts in order to designate the functionality of a certain complex belonging to the Coțofeni culture.

Also, this paper refers in detail to the types of raw lithic materials used by Eneolithic human communities for the manufacture of tools and weapons, and also establishes the sources of origin of these rocks. We used this approach to correspond analyses performed with the help of the Winbasp program.

I. HISTORICAL RESEARCH

In the chapter dedicated to the historical research, we indicated the main contributions to the subject. Starting with the second half of the 19th century, names like M. J. Ackner, Z. Torma or Tegláș G. were noted. For the beginning of the 20th century, an important figure is that of M.

Roska[1], the archaeologist who researched carved lithic materials belonging to the Paleolithic era and post-Paleolithic periods.

For the second half of the 20th century, H. Dumitrescu[2] is distinguished, who first uses the French terminology in the description of the carved lithic pieces.

As a reference, for all the generations that have dealt and will continue to study these types of artifacts, Al. Păunescu's work from 1970 has been and will remain, *Evoluția uneltelor și armelor de piatră cioplită descoperite pe teritoriul României*[3].

For Transylvania, more recent studies were conducted by O. Crandell[4] and I. C. Băltean[5], who dealt with the detection of the sources of origin of certain rocks used by Eneolithic human communities.

In recent years, we have also tried to expose techno-typological and functional analyzes of Eneolithic carved lithic materials, which come from several prehistoric sites in the area of the Middle Mureş Basin: Șoimuş – *Lângă Sat*[6], Șeușa - *Gorgan*[7], Alba Iulia - *Lumea Nouă*[8]. We also turned our attention to experimental archeology, which can elaborate stone manufacturing process which were not previously well understood[9].

XRF analyses carried out in recent years[10] on obsidian artifacts taken from several sites in Banat and Transylvania were completed and modified the theories about the procurement of this raw material during the Neolithic and Eneolithic periods.

The only source of obsidian which was exploited at the beginning of the Neolithic in Banat[11] and Transylvania[12] was in Mad-Kakashegy in the Tokay Mountains (Starčevo-Cris IVA). The Middle-Neolithic in Transylvania and Banat also saw the use of obsidian sources in eastern Slovakia, namely Vinicky-Čejkov. The same sources of exploitation is observed in the late Neolithic and the Early[13] and Middle[14] Eneolithic in Transylvania. Also, the Vinicky- Čejkov area

[1] Roska 1925; Roska 1928; Roska 1941.
[2] Dumitrescu 1954, Chapter IV.
[3] Păunescu 1970.
[4] Crandell 2005, p. 137-163; Crandell 2012, p. 69-78; 2013, p. 125-142; Crandell, Popa 2015, p. 45-63.
[5] Băltean *et al*. 2008, p. 11-29.
[6] Barbu 2013, p. 75-98; Barbu, Marc 2013, p. 41-57; Barbu 2016, p. 93-102.
[7] Barbu, Ciută 2017a, p. 155-189; Barbu, Ciută 2017b, p. 221-232.
[8] Barbu, Gligor 2018, p. 23-56; Barbu, Gligor 2019, p. 45-66; Barbu, Gligor 2021, în curs de apariție.
[9] Barbu, Barbu 2014, p. 497-511; Barbu, Barbu 2016, p. 537-550, Barbu, Barbu, Bărbat 2022, în curs de apariție.
[10] Glascock *et al*. 2016, p. 75-87; Glascock *et al*. 2017, p. 175-187.
[11] Glascock *et al*. 2016, p. 79.
[12] Glascock *et al*. 2017, p. 180.
[13] Glascock *et al*. 2016, p. 80, Boroneanț, Bonsall, Sava 2020, în curs de apariție.
[14] Glascock *et al*. 2017, p. 178-179.

continues to be a source of obsidian in the late Neolithic of Banat, along with the Tolcsva source, the latter being exploited in the early Eneolithic in this region[15].

For Moldova, the research of the Eneolithic carved lithic industries came from Ş. Cucoş, in collaboration with A. Muraru[16], D. Boghian[17], S. Țurcanu[18] and D. M. Vornicu[19].

For the southern part of Romania and other areas[20], the studies on the Neo-Eneolithic carved lithic material belong, for the most part, to L. Niţă[21].

At the European level, the carved lithic industries belonging to the prehistoric epochs are intensively researched; special symposia[22] are organized which are dedicated to this research. Brothers J. and S. Kozlowski[23] deal with the „Stone Age in the Polish territories"[24]; P. Biagi deals intensely with the sources of lithic raw materials from Banat and Transylvania, researching, together with B. Voytek, Peștera Ungurească (Caprelor) from Cheile Turzii[25]; E. Starnini studies Neolithic carved and polished lithic materials[26]; M. Gurova researches the so-called "Balkan flint" and finds the sources[27], but also studies other raw materials, such as cherts[28] and Neolithic sickle inserts[29].

II. GEOGRAPHICAL CONTEXT

The archeological sites, located along the Mureș River, on both sides of this important watercourse, are, from east to west, the following: the Decea necropolis, the sites from Alba Iulia - *Lumea Nouă* and Șeușa - *Gorgan* (Alba county), *Jipiș*, Șoimuș – *Lângă Sat* and Mintia - *Gerhat* (Hunedoara county), the necropolis from Pecica - *East* and the site from Pecica - *Șanțul Mare* (Arad county).

[15] Glascock *et al*. 2016, p. 80.
[16] Ţurcanu 2009, p. 27.
[17] Ţurcanu 2009, p. 28.
[18] Ţurcanu 2009.
[19] Vornicu 2014, p. 38-46; Vornicu 2015, p. 201; Vornicu 2017, p. 191.
[20] Niţă *et al*. 2015, p. 97-117.
[21] Niţă, Ilie 2013, p. 119-130; Niţă, Ştefan 2011, p. 195-207.
[22] Kozlowski 1971; Kozlowski, Kozlowski 1987.
[23] Ginter, Kozlowski 1990.
[24] Kozlowski, Kozlowski 1977.
[25] Biagi, Voytek 2006, p. 177-202.
[26] Starnini 1994, p. 101-110; Stranini 1996, p. 93-104.
[27]Gurova 2012b, p. 15-48.
[28] Andreeva *et al*. 2014, p. 25-45.
[29] Gurova 2005, p. 1-14; Gurova 2016, p. 159-165.

The geographical area in question is part of relief units such as: the Transylvanian Depression, which contains the Târnavelor Plateau[30] (with the Secaşelor Plateau[31]) and part of the southern Transylvanian Plain[32]; the Apuseni Mountains[33], with the eastern (Trascău Mountains), southern (Metaliferi Mountains) and western parts (Zarand Mountains); Poiana Ruscă Mountains[34]; and the Lipovei Hills[35] and Western Plain[36] (with the subunits: Arad Plain, Vinga Plain, Aranca Plain).

From a climatic point of view, the studied period, approximately between 4708-4206 BC[37] (the beginnings of the Foeni Cultural Group) and 2780-2580 BC[38] (the end of the existence of the Coţofeni communities), is in the Holocene. According to the scheme proposed by Blytt-Sernander, which is a periodization of this climatic stage, the Eneolithic can be included in one of the phases of this process: Atlantic (5500-2250 BC)[39].

In Romania, around 5000 BP, the vegetation was already similar to the current one[40].

The location of the Eneolithic human settlements along the Mureș River is not accidental, since its terraces, but also the higher foothills, met the favorable conditions to be inhabited such as soils, forests, and areas with rock deposits that could be carved.

Surface natural resources have been one of the main reasons why human communities in various historical epochs have settled in this area. The fertile soils on the terraces of the Mureş were suitable for cultivating plants, especially cereals[41].

Evidence to support this includes deer antlers or bovine bone sickles, the numerous grinders, rubbers and crushers discovered in the Eneolithic settlements, used for crushing grain, and the supply vessels with vegetal remains forming the composition of the ceramic paste. The meadows in the Mureş river meadow provided the vegetal mass necessary for the successful practice of the second basic occupation - animal husbandry[42].

[30] Mac, Josan 1987, p. 566-578.
[31] Stroia, Raboca 1987, p. 590-594.
[32] Mac *et al.* 1987, p. 541-547.
[33] Savu 1987, p. 430-492.
[34] Grigore, Ianoş 1987, p. 421-426.
[35] Tufescu 1974, p. 149.
[36] Posea 1997.
[37] Draşovean 2013a, p. 17.
[38] Ciugudean 2000, p. 59.
[39] Cârciumaru 1996, p. 18.
[40] Ciută 2009, p. 94.
[41] Ciută 2009, p. 95.
[42] Gligor 2000, p. 7.

Clay from the Mures river valley as well as from the terraces of the Mureş, were necessary both for making ceramics and obtaining natural dyes used for painting ornamentations on ceramic vessels, but also for platforms and walls of surface dwellings, hearths and ovens[43].

III. ENEOLITHIC CULTURES IN THE MIDDLE AND LOWER MUREȘ BASIN

III. 1. FOENI CULTURAL GROUP – 4750 – 4400 BC[44]

The Foeni cultural group, with communities of southern origin[45], whose beginnings are linked to some Neolithic populations in Macedonia[46], enters through Banat, where it was signaled in its first phase, in the eponymous site[47], to Transylvania, using the Mureş valley corridor[48].

III. 1. 2a. The carved lithic industry belonging to the Foeni cultural group from the Mintia - *Gerhat* site

Regarding the rocks used for making the tools necessary for carrying out daily activities, in Mintia - Gerhat the Banat-type flint was preferred alongside local raw materials. The procurement area of Banat type flint remains unknown for the time being, taking into account the identification of a variety of this rock specific to the Transylvanian space which is different from the Banat variety.

During phase IIb of the internal evolution of the Foeni cultural group, the flint rocks of Banat type were probably knapped at the place of procurement and were prepared to be brought to the settlement, both semi-finished and finished; and in phase III, the rocks were also carved primarily at the place of procurement, but were in some cases transported to the settlement cores to be carved later (as shown by the technological analysis of the materials).

Regarding the types of tools, there is an intense use of penknives in phase III, which occupy a percentage of 47% of the total equipment, while in phase IIb, this percentage is occupied by scrapers.

The care and attention paid to the manufacture of tools is more visible during phase IIb, and during phase III we notice that non-local rocks of very good quality are so appreciated that a simple finished gray flint core, for example, is transformed into a scraper, as a means of recycling superior quality raw material.

[43] Gligor 2000, p. 7.
[44] Gligor 2014, p. 96.
[45] Drașovean 1993, p. 22 (We mention that the author, at that stage of the research, used the term Petrești A).
[46] Drașovean 2005, p. 11-26.
[47] Drașovean 1993, p. 3-9.
[48] Gligor 2009a, p. 52-57.

III. 1. 2b. The carved lithic industry belonging to the cultural group Foeni from the site of Alba Iulia - *Lumea Nouă*

Regarding the Foeni habitation from *Lumea Nouă*, the studies indicate the Trascău Mountains as a procurement area for silicified bioclastic limestone, a predominant rock in the carved lithic industry. The blocks were carved at the place of supply with rocks and were then transported to the settlement.

An important aspect in terms of raw materials is the drastic reduction of Banat-type flint in the area inhabited during phase III, compared to that inhabited during phase IIb.

Along with the Balkan flint, high quality rocks such as obsidian, opal or menilite are used to make tools that were reactivated/reused in case of accidents.

From a technological point of view, the character of the carving is mainly laminar.

The typological analysis highlighted three large groups of tools: penknives, scrapers and components for sickles, but also types of tools reduced numerically, but of major importance, in terms of the technique of their manufacturing, perpetuated over thousands of years – *burin*s and *racloir*s. It seems that phase III of the evolution of this Foeni community is characterized by the fact that scrapers were no longer needed. Instead, sickle inserts and penknife-type tools are still used.

III. 2. PETREŞTI CULTURE – 4500-4250 BC[49]

The analysis of the genesis of the Petreşti culture, in relation to the discoveries from the Banat area, belongs to Fl. Drașovean, who, in a series of studies, claims that in Transylvania, the Foeni cultural group contributes to the birth of the Petreşti culture[50] at the end of the Vinča C1 phase[51], where it displaces the Turdaș populations from the Mureș Valley and dissipates them towards the center of Transylvania, where the Iclod Cultural Group is born[52]. This theory, of the infiltration of the bearers of the Petreşti culture in Transylvania from Banat, is becoming more generally agreed upon[53].

III. 2. 2a. Carved lithic materials belonging to Foeni-Petrești from the site of Alba Iulia - *Lumea Nouă*

The small number of carved lithic materials belonging to the communities in the transformation phase in the direction of Petrești from Alba Iulia - *Lumea Nouă*, reveals a „fine" phase of passage, the discoveries of this kind being highlighted by two surfaces.

[49] Gligor 2014, p. 92.
[50] Drașovean 1993, p. 20–22; Drașovean 2003, pp. 39–46; Drașovean 2004, pp. 27–36; Drașovean 2005, p. 13.
[51] Drașovean 2003, p. 40, 45-46.
[52] Drașovean 2005, p. 13.
[53] Luca 2001, p. 144-145; Lazarovici-Lazarovici 2007; Gligor 2007, p. 1-28; Gligor 2009a; Gligor 2009b, p. 235-244; Gligor 2014, p. 91-106.

III. 2. 2b. The carved lithic industry belonging to the Petrești communities from the site from Alba Iulia - *Lumea Nouă*

The carved lithic industry belonging to the Petrești communities from Alba Iulia - *Lumea Nouă* consists of rocks that come from local, accessible sources. The non-local ones are reduced in quantity and exploited to the maximum (we mention here the 3 finished flint cores of Banat type).

The character of the carving is a mixed one, the number of flakes being very close to that of the blades.

The carved lithic tools made by the Petrești community are less abundant compared to those observed in the communities of the Foeni cultural group from the same site. From a typological point of view, the element of continuity is represented by the predominance within the tools of the Petrești community of the penknife, a tool used for the purpose of cutting various materials.

Regarding the tools with double functionality, both edges of two pieces were arranged in different ways which would create two different active parts, specifically referring to *racloir*s - *grattoir*.

III. 3. TISZAPOLGÁR CULTURE - 4709–4544 BC[54] – 4326-4235 BC[55]

The Tiszapolgár culture is one of the great civilizations of the Eneolithic era[56]. The genesis of this culture is the result of a cultural synthesis, but at the same time each of the different late Neolithic civilizations in the space in which the Tiszapolgár culture develops bring strong contributions to economic and cultural ties[57]. This phenomenon is manifested through painting ceramics, leaving the tell and forming small settlements nearby, separating necropoles from settlements, the predominant occupation becoming animal husbandry, intensification of hunting and the emergence and development of copper metallurgy[58].

III. 3. 2a. Carved lithic ensemble belonging to the Tiszapolgár community from the *Jipiş* site

The pieces discovered at Jipiș reveal very diverse raw materials, with the very good quality rocks being found in small numbers and being of non-local origin. Among them we mention the Balkan flint, the obsidian and the menilite, from 6 pieces made of such rocks, 3 being used as tools such as penknives.

From a technical point of view, the carving is mixed, without a standardized aspect.

[54] Unobserved phase on the territory of our country, Diaconescu 2009.
[55] Diaconescu 2013, p. 48.
[56] Iercoșan 2002, p. 9.
[57] Diaconescu 2009, p. 76.
[58] Iercoșan 2002, p. 164.

Among the tools, penknives and scrapers are predominant, but 3 sickle inserts, 2 arrowheads, 2 strikers, 2 polishers and a tool with dual functionality were also discovered.

The dimensions and small weights of the arrowheads and the thin rods of the arrows, indicated by the small diameter (0,5 cm) of the glove hole of a horn arrowhead discovered at *Jipiș*, seem to indicate the use of small bows (possibly composite), which are specific to communities with a high degree of mobility[59].

III. 3. 2b. Carved lithic industry belonging to the Tiszapolgár community from the Șoimuș - *Lângă Sat* site[60]

The carved lithic ensemble belonging to the Tiszapolgár community from Șoimuș – *Lângă Sat* (compact, stable dwelling) is composed, to a large extent, of rocks of local origin, the respective site being at a distance of approx. 7 km from the unitary source of lithic raw materials from Herepeia - Chergheș-Cârjiți - Valea Roatei.

The carving applied to these rocks was laminar, and there was also a flake component. The ease with which it was possible to reach the local lithic sources resulted in the transport of the rocks in the settlement and their carving here, as evidenced by the larger number of supports from the first technological phase of the carving process and the numerous cores from the same raw materials.

The so-called non-local rocks are found in a small number, and among these the menilite was highly appreciated, being stored and preserved in various stages of processing.

From a typological point of view, tools such as sickle inserts predominate, and among them, the inserts with SiO_2 are deposited obliquely and bifacially. The use of the type of carved stone sickle with obliquely gloved elements on the support plane is due to the efficiency and productivity of the work performed with this tool, as demonstrated by the case study conducted through the lens of experimental archeology.

III. 3. 2c. Carved lithic ensemble belonging to the Tiszapolgár and Bodrogkerestúr cultures from the necropolis of Pecica – *Est*

As for the carved lithic pieces discovered in the tombs of the necropolis at Pecica - *Est*, belonging to the communities of Tiszapolgár and Bodrogkerestúr, the raw materials from which these pieces were made are not of local origin, the areas with such deposits being difficult to access from the point of view of distance from the Pecica area. These are represented by very good quality rocks (Volhynian flint, Obsidian, Balkan flint, Menilite).

[59] Barbu *et al.* 2018.
[60] Barbu 2013, p. 75-96.

From a technological point of view, the carved lithic ensemble is a standardized one, the carving being, almost entirely, laminar; this is most likely due to the funerary contexts in which the pieces were discovered.

In the tombs were discovered as part of the funeral inventory, daggers of various types, represented by long blades (retouched or not), arrowheads, knives and penknives, drills, 1 knife-drill, 1 scraper and 3 laminar cores.

We will be able to discuss the different associations of carved lithic pieces observed in the tombs according to the results of anthropological analyses, which would indicate how these types of materials marked the funerary ritual of the necropolis from Pecica - *Est*.

III. 4. DECEA MUREȘULUI CULTURAL GROUP – 4237 BC[61]

The cultural group Decea Mureșului is part of the first wave of movements to the west and southwest of the steppe populations. These population movements could be traced and researched through isolated flat burials[62]. In Romania, the first discovery was the research of the burial necropolis from Decea (com. Mirăslău, jud. Alba, Marosdecse), visualized by the opening of a gravel quarry in 1912. On this occasion, 19 graves were discovered. Other discoveries belonging to Decea Mureșului cultural group in the Mureș Valley are the following: Decea, Csongrád (Hungary), Aiud-Microraion III, Mirăslău, Cetea, Șard, Ocna Sibiului, Meșcreac[63], and Șeușa-*Gorgan*[64].

III. 4. 2a. The carved lithic ensemble belonging to the cultural group Decea Mureșului from the necropolis from Decea[65]

The 8 carved lithic pieces discovered in the tombs of the Decea necropolis indicate a high level of standardization of carving.

The predominant raw material is Volhynian flint.

The absence of local raw materials seems to indicate that this community from Decea had not settled in the area for a long time and that the burials (relatively few) took place in a short time.

In the graves were discovered, being part of the funeral inventory, daggers of various types, represented by long blades (retouched or not), knives and 1 scraper.

[61] Govedarica 2004, 72-73, Abb. 9.
[62] Gligor 2014, p. 142.
[63] Luca 1999, p. 5-33.
[64] Ciută, Gligor 2001.
[65] We would like to thank once again Mr. Gheorghe Lazarovici, Mr. Felix Marcu and Mrs. Luminița Săsărman for access to the study of these pieces.

We notice the existence of two necropoles with burial tombs, which are contemporaneous but belonging to different communities. The carved lithic artifacts that are part of the funerary inventories were made of the same raw materials.

III. 4. 2b. The carved lithic ensemble belonging to the Decea Mureșului community from the Șeușa - *Gorgan* site[66]

The raw materials belonging to the Decea Mureșului community from Șeușa - Gorgan are diverse, although the sample of pieces is low in number and are inferior in terms of quality, half of them being represented by sandstones, clay, quartzite, and *chaille*s.

From a technological point of view, the carving is non-standardized, although it is mostly laminar and the respective supports are fragmentary, a sign that the carving was done only when needed and the products were used in the raw state (except for two retouched knives).

III. 5. HERCULANE II-III HORIZON – 4350 – 3800 BC[67]

Herculane II-III type manifestations overlap in the intra-Carpathian space, Banat and Oltenia, the late manifestations of the Petreşti cultures, Sălcuţa IIc-III-IV, Tiszapolgár, Decea Mureşului, Bodrogkeresztúr, being superimposed by the manifestations of Cernavodă I, Renie II, Cernavodă III. In the intra-Carpathian area, we record these occurrences starting with the late Tiszapolgár and early Bodrogkeresztúr manifestations, enduring until after the end of the Bodrogkeresztúr culture[68].

III. 5. 2. The carved lithic ensemble belonging to the Herculane II-III Horizon from Pecica - *Șanțul Mare* site

Regarding the carved lithic ensemble discovered in the lower level belonging to the Herculane II-III type manifestations from the site of Pecica - *Şanţul Mare*, the predominant material is obsidian (50%), a high-quality rock, suitable for making cutting tools. It is also the reason why tools such as penknives, trapezoids, and scrapers were made from this rock.

The technological analysis of the carved lithic pieces indicated the absence of primary carving, due to the very low presence of cortical supports and cores, from the initial carving having only identified partially cortical supports. The presence of a single (finished) core suggests a carving that, for the most part, did not take place in the settlement, many of the pieces (especially those made of obsidian, Balkan flint and Volhynian flint) most likely occurring as a result of interregional exchange of the era in the form of semi-finished and/or finished pieces.

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[66] The carved lithic materials that are the object of the present study were published by the author, in collaboration with Dr. Marius-Mihai Ciută (Barbu, Ciută 2017a, p. 155-188).
[67] Gligor 2014, p. 188.
[68] Gligor 2014, p. 186, Fig. 11.

As for the tools such as denticulated parts, with traces of polish on the active side, we can only describe the significant amount in which they were discovered, but it is impossible for us to conclusively identify (at least for now[69]) a particular activity in which they were used. Moreover, it is very possible that these pieces do not belong to the lower level from Pecica - *Şanţul Mare*[70], but come from the levels of the Bronze Age.

III. 6. COȚOFENI CULTURE – 3500[71] – 2780-2580 BC[72]

The Coțofeni culture represents an important component of the processes that marked the end of the Eneolithic period, contributing to the birth of the Bronze Age civilization in the Transylvanian space[73].

In 1976 appears the monograph of the Coțofeni culture, in which P. Roman, based mainly on the stratigraphic sequence from the *Peştera Hoţilor* from Băile Herculane, realizes the periodization of the culture, on three main phases (I-III), each with several subphases[74]. Phase III is the best documented, both on the territory of Transylvania and of Banat. It represents the phase of maximum geographical expansion of the culture[75]. In phase III, the Coţofeni culture from Transylvania experienced a real explosion, a great qualitative leap. There is a regionalization determined, probably, by the existence of production centers that, on the one hand, unify the essential forms of expression, and on the other hand, fragment the Transylvanian area into several microzones: Deva, Sebeş, Aiud, Mediaş, Târgu Mureş, and Cluj-Napoca[76].

III. 6. 2a. The carved lithic industry belonging to the Coțofeni communities from the Șeușa - *Gorgan* site[77]

The settlement belonging to the Coțofeni communities from Șeușa - Gorgan presents two stages of habitation, one stable and the other seasonal, with specific characteristics in terms of approaching the activity of carving stone in order to make the necessary tools.

The raw materials (jasper and flint) that are predominant in both carved lithic ensembles do not differ much for the two phases of habitation. Given that they have been discovered in a significant number, compared to other types of rocks and that deposits of flint and jasper are

[69] In the future, we want to realize a study based on specialized archaeological experiments, in which we will test the efficiency of such tools for harvesting grain, but also for cutting wood.
[70] We affirm this considering the typological singularity in the studied epoch and the statement of Al. Păunescu, according to which these pieces *are discovered especially in settlements attributed to the Bronze Age and were used as real saws, and those that bear traces of luster on the denticulated side were used as components for sickles* (Păunescu 1970).
[71] Băjenaru 1998, p. 6.
[72] Ciugudean 2000, p. 55.
[73] Ciugudean 2000, p. 5.
[74]Roman 1976, p. 35-49.
[75] Ciugudean 2000, p. 49.
[76] Roman 1976, p. 45.
[77] The carved lithic materials were published by the author, in collaboration with Dr. Marius-Mihai Ciută (Barbu, Ciută 2017a, p. 155-188), (Barbu, Ciută 2017b, p. 221-232).

reported in several areas near the site, it is very possible that the areas for procuring these rocks are local.

The technology of the carved lithic pieces, discovered during the two housing phases, reveals a mixed, non-standardized carving, probably made in the places where the rocks were procured, with tools that were transported to the settlement, in order to be preserved. A deer antler *chasse-lame* discovered in the stable phase, which helps of carving by indirect percussion, is specifically referenced.

In the seasonal habitation, a double quartz hammer was discovered, with accentuated traces of wear, its presence and the absence of cores, in a settlement with seasonal status, indicating its storage and transportation whenever the community moved, for expeditions aimed at rock supplies.

From a typological point of view, the main difference between the two carved lithic assemblages is represented by the type of tool that are predominant in the identified equipment. Within the stable habitation, dominant are the sickle inserts which indicate the practice of agriculture. For the seasonal phase, several penknives were identified which were used in the activities of cutting various materials.

We would also like to mention the identification of a tool making workshop within the stable habitation belonging to the Coțofeni communities, from the Șeușa - *Gorgan* site, being the L_5 complex, in which tools of various types were made (sickle inserts, ornaments, weapons) and from several raw materials (stone, MDA). Also, in L_5 were kept the tools with which the instruments and objects mentioned were manufactured: *chasse-lame* and a drill.

III. 6. 2b. The carved lithic industry belonging to the Coțofeni communities from the Șoimuș - *Lângă Sat* site[78]

The settlement belonging to the communities Coțofeni from Șoimuș - *Lângă Sat* presents the characteristics of a terrace habitation, on the right bank of the river Mureș, which, as a geographical point, is near the areas where deposits of raw materials (jasper, flint) are reported, which could be used for the supply of rocks, necessary for the manufacture of tools, sources mentioned above.

A common raw material found in quite large quantities in the Coțofeni settlements is quartzite.

The technological analysis revealed a non-standardized carving, the products being mostly represented by scraps. The presence, in large numbers, of the supports of the latter phases of the carving, as well as of the 3 cores, of which two are finished, indicate the fact that a significant part

[78] Barbu, Marc 2013, p. 41-56.

of the carving was made in the settlement. Also, the small amount of cortical supports indicates a primary carving performed, most likely, at the place of collection of the raw materials.

Following the typological analysis, only 5 tools could be identified, the range of supports with sharp edges being richly represented.

IV. LITHIC RAW MATERIALS. PROCUREMENT AREAS

The use of the Winbasp program, for performing correspondence analyses, between pieces, such as tools and lithic raw materials from which they were manufactured, made it possible to highlight relationships that would not have been possible in other ways.

Thus, following the analysis of correspondence on all the carved lithic pieces in this paper (1965) and the raw materials from which they were made, several clusters were formed:

- cluster of scraps from raw materials such as silicified bioclastic limestone, jasper, flint, Brad jasper, siliceous sandstone, Herepeia flint, quartzite, silicified limestone, quartz and argillite, used by all the Eneolithic communities studied, to a greater or lesser extent;

- the obsidian scraps cluster, which detaches from the original cluster. Such pieces are used by the communities of the Foeni cultural group, the Petrești culture, the Tiszapolgár culture and Herculane II-III type manifestations;

- the cluster of menilite and flint tools of Banat type used by the bearers of the Foeni cultural group, the Petrești culture, the Tiszapolgár culture and the Decea Mureșului cultural group;

- the cluster of opal and radiolarite tools belonging to the Foeni cultural group and the Tiszapolgár culture;

- the cluster of bioclastic micritic limestone tools used by the communities of the Foeni cultural group, the Tiszapolgár culture, the Decea Mureșului cultural group and the Coțofeni culture;

- the cluster of Balkan flint tools used by the bearers of the Foeni cultural group, the Tiszapolgár culture and Herculane II-III type manifestations;

- the weapons cluster, made of Volhynian flint belonging to the Tiszapolgár culture and the Decea Mureșului cultural group.

Following the use of correspondence analyzes performed between the various types of tools (689) and the lithic raw materials from which they were made, the following groups were formed:

- cluster of common tools (penknives, scrapers, sickle inserts, *racloir*-s) and weapons such as arrowheads and trapezoids, made of silicified bioclastic limestone, Banat type flint, flint, jasper,

bioclastic micritic limestone, obsidian, clay, opal, siliceous sandstone, used by the communities of the Foeni cultural group, the Petrești culture, the Tiszapolgár culture, the Decea Mureșului cultural group and the Coțofeni culture;

- the cluster of dual-function tools made of Balkan flint, used by the bearers of the Foeni cultural group and the Tiszapolgár culture;

- the cluster of quartz tools, used by the populations of the cultural group Decea Mureșului and Herculane II-III type manifestations;

- the cluster of Volhynian flint daggers discovered in the funerary contexts belonging to the bearers of the Tiszapolgár culture and the Decea Mureșului cultural group;

- cluster of denticulated menilite pieces.

V. CONCLUSIONS

In general, the conclusions are based on the similarities and differences between the different Eneolithic communities that inhabited the area of the Middle and Lower Mureș Basin.

The differences are indicated by the use of local lithic raw materials, the choice of living areas being conditioned in fact by the proximity of sources with rock deposits, which ensure the necessary components for the manufacture of tools and weapons. The main sources were the Trascău Mountains, the Sebeș area, the Poiana Ruscă Mountains area.

Non-local lithic raw materials are numerically reduced and occurred through intercultural/interregional exchanges. Rocks such as Balkan flint, obsidian or menilite have been used by almost all Eneolithic communities studied, and the recycling and continued use of tools made from these types of raw materials reveals the value of high-quality pieces.

As for the Volhynian flint discovered in the two funerary contexts - Decea and Pecica - *Est* - it is possible that this raw material, of remarkable quality, was procured by members of the respective communities in the area of origin, especially for making weapons. The presence in the necropolis of the daggers made of this type of rock is a specific feature of the chronological horizon Tiszapolgár - Bodrogkerestúr - Decea Mureșului.

The status of human settlements influences the type of economy adopted by the respective communities in a certain time and space, with the seasonal settlements being focused on the procurement of food by hunting and gathering, while members of stable settlements were practicing agriculture and animal husbandry.

Appendix 1

Appendix 2

Abbreviations

AMP	- Acta Musei Porolissensis. Zalău
AnB	- Analele Banatului. Timişoara
Antaeus	- Antaeus. Communicationes ex Instituto Archeologico Academiae Scientiarum Hungaricae. Budapest
Apulum	- Acta Musei Apulensis. Alba Iulia
Archaeologia Bulgarica	- Archaeologia Bulgarica. Sofia
BAM	- Brukenthal Acta Musei. Sibiu
CCA	- Cronica Cercetărilor Arheologice din România. București
JAM	- Jósa András Múzeum Évkönyve
Sargetia	- Acta Musei Devensis. Deva
SCIV(A)	- Studii şi cercetări de istorie veche şi arheologie. Bucureşti
Tyragetia	- Tyragetia. Muzeul Național de Istorie a Moldovei. Chișinău

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